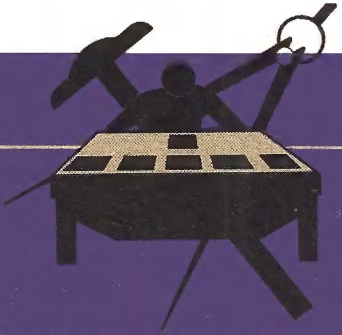
OFFSET STRIPPING

Black and White



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(Continued on Inside Back Cover)

BASIC TEXTS FOR APPRENTICES IN LITHOGRAPHY

OFFSET
STRIPPING
Black and White

By

ARTHUR SHARPLES, Jr.

Issued by

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FOREWORD

Preparing a text on stripping is very much like working at the job itself. For, in the last analysis, the stripper picks up the job near its inception and is connected with it in a responsible capacity until it is on the press. Indeed his interest in the job extends even to the press sheet which alone can assure him that his work meets specifications. It is difficult to say exactly where the stripper's responsibilities begin and end.

In this treatise the author endeavors to cover all phases of black-and-white stripping, in short, to provide the necessary subject matter for equipping apprentices to work in any shop. To this end they are taken step by step through the various standardized procedures that have been developed and perfected through trial and error into accepted practice.

The author also points out the stripper's relationship to other departments in the shop and makes clear how, through standardization of methods, he may expedite the handling of jobs after they leave him. We sincerely hope that the text furnishes sufficient background in stripping fundamentals to equip trainees to handle practically any production job that may come their way.

We are obligated to the following companies and individuals for assistance in making the text possible:

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Unit 1.

INTRODUCTION

To do a job correctly and accurately, the first thing the workman needs is a set of proper tools; the second is proper space and surroundings in which to work.

The tools listed below should be sufficient to enable the stripper to handle any one-color job. All tools should be of good quality.

1. A steel straight edge of sufficient length to extend beyond the edge of the largest layout to be drawn. One with a beveled edge is preferable.
2. A steel carpenter's square.
3. A 48″ steel rule. This rule should be thin, or beveled in such manner that the markings will lie as nearly against the paper as possible. This helps to reduce the chance for error when transferring measurements from the rule to the paper.
4. A 6″ or 12″ steel rule.
5. A pair of large shears.
6. Two steel triangles (30° x 60°), the perpendicular edge of same to be 8″ to 10″ long and to have lifting knobs in the center.
7. A 12″ steel straight edge for use when cutting with a razor blade to avoid marring the other tools.
8. A pair of draftman's adjustable dividers. (Legs to be about 4½″ long.)
9. A pair of machinist's set dividers—4″.
10. A pair of machinist's set dividers—6″.
11. An assortment of needles and scrapers such as are found in a litho supply house.
12. A protractor.
13. A French curve.
14. Several sizes of artist's paint brushes.
15. A ruling pen, India ink, razor blades (single edge) in holders, cellulose tape, whetstone and opaque.
16. The linen tester type of magnifying glass.

A stripping table with working room to spare should be provided to accommodate the largest press plate to be used. The light in the table should be strong enough to enable the stripper to see with ease the ruling on a goldenrod sheet through the line of type on a negative. If fluorescent lighting is not used in the table, an intermediate ground glass should be placed above the lights to diffuse the rays and to prevent the top of the table from becoming hot. A shaded drop light with an adjustable length cord should hang over the center of the table. Sufficient room should be provided to allow the stripper to work from all sides of the table comfortably. Particularly when the floor is concrete, as most stripping must be done standing, a slatted wooden platform around the table will take some of the strain from the stripper's legs.

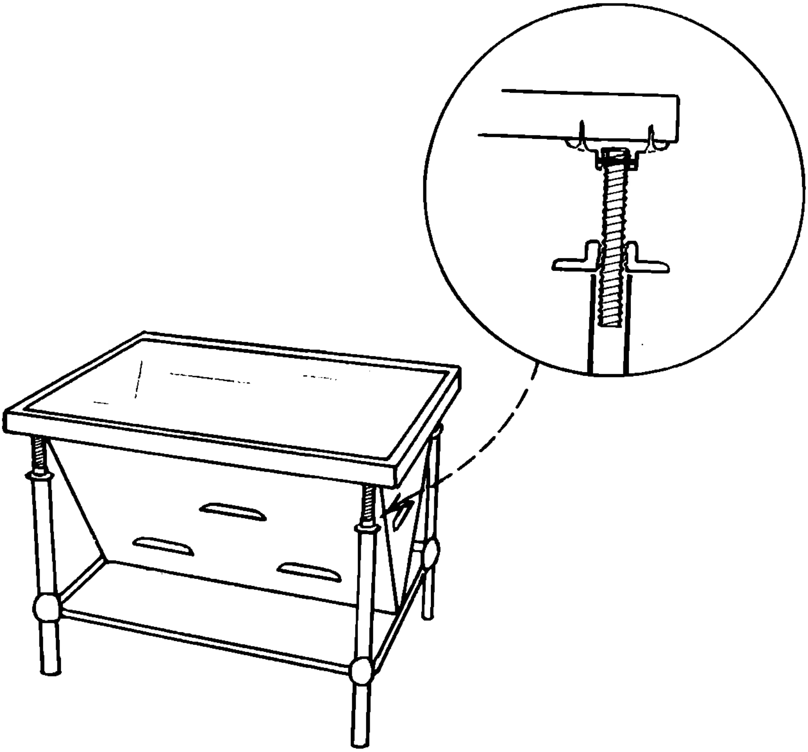


FIG. 1—STRIPPING TABLE

A wooden table should be provided for holding work, copy, and tools. This should be placed close enough to the stripping table to enable the stripper to reach it by merely turning around.

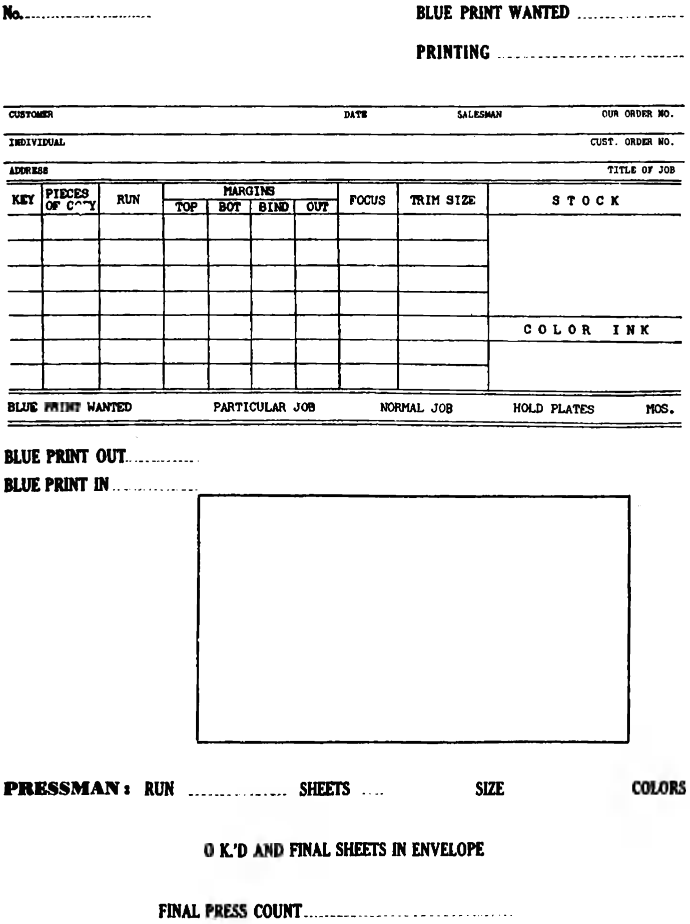
There should be little other light in the stripping room except the light from the stripping table and a few drop lights. This arrangement enables the stripper to work faster and more accurately than he could in a brightly lighted room.

The stripper is now prepared to accept a job. It is essential for this job to be given him with all elements and instructions complete, so that he can go ahead without looking for negatives (copy) or asking for additional instructions. This is the most economical and common-sense method of production and results in a smooth-running department.

The preparation of the job for the stripper will depend upon the organization of the individual shop. However, there are certain standard instructions that can be discussed here.

1. Name and number of the job.
2. Date needed for the press.
3. A layout drawn to show the positions and sizes of all units.
4. Number of pages or units.
5. Number and type of inserts.
6. Dimensions of all margins.
7. Size of press sheet and kind of paper.
8. Number of press plates.
9. Press or presses on which job is to be run.
10. Type of binding.
11. Such miscellaneous information as is pertinent to the particular job.

The copy on the job should be marked with identification and instructions in the margin or on a tissue overlay. Inserts should be keyed to the main copy with as simple a code as pos-



No. ....   BLUE PRINT WANTED ....

PRINTING ....

CUSTOMER | DATE | SALESMAN | OUR ORDER NO.

INDIVIDUAL | CUST. ORDER NO.

ADDRESS | TITLE OF JOB

KEY	PIECES OF COPY	RUN	MARGINS				FOCUS	TRIM SIZE	STOCK
			TOP	BOT	BIND	OUT			
									COLOR INK

BLUE PRINT WANTED | PARTICULAR JOB | NORMAL JOB | HOLD PLATES | MOS.

BLUE PRINT OUT ....

BLUE PRINT IN ....

PRESSMAN: RUN .... SHEETS .... SIZE COLORS

O K'D AND FINAL SHEETS IN ENVELOPE

FINAL PRESS COUNT ....

FIG. 2—JOB SHEET

sible. When crop marks and key numbers can be placed so as not to mar the copy, they should be made heavy enough to photograph. This allows the negative to be identified without the trouble of matching it to the original copy. Copy that cannot be marked this way, should be marked lightly on the back so that the impression from the marking does not come through and spoil the copy. A tissue overlay is also practical and care should again be taken not to mar the copy. It is surprising the amount of unwanted material the camera will pick up when the negative is being shot. Therefore, the best policy, when in doubt, is to choose a marking method that is fool-proof.

Any writing or lines needed in the making of the copy, but not desired in the final job, should be done with a light blue pencil, because blue markings do not photograph. A dummy and imposition for the proposed piece should accompany the job ticket.

At the start of each job the stripper must read the instructions on the job ticket and on the copy; study the layout, dummy, and imposition; and check the negatives for size and quality. Any questions about the job should be asked before starting the work, thus saving time and trouble. Before the stripper begins the actual stripping he should call attention to questionable quality, if any, in negatives and should be certain that the entire job is assembled and that he has adequate instructions.

With all elements of the job studied the stripper plans his course of action. He decides first what type of layout he will rule, second how to include the inserts Unit 5, and third how his work affects the departments that follow up on the job. He should then select the method of operation best suited for all concerned.

The step-by-step stripping procedure outlined in succeeding chapters is tied in with the follow-up work of the opaquer, platemaker, tuscher, pressman, and binder purely to show how the quality of each of these men's work is dependent upon the accuracy and workmanship of the stripper.

In the stripping department the job becomes an assembled unit for the first time. At this stage it is still possible for some changes and corrections to be made before sending it on to the platemaker. After the plate has been made the possibility of correcting, or making changes, is practically non existent. Therefore, the need for neatness and accuracy on the stripper's part cannot be stressed too much.

COPY—the material that is furnished by the customer for reproduction.

INSERT—an individual portion of the copy that is to be combined with the main copy.

CROP MARKS—the cross marks at the corners of the copy to denote the area to be used.

KEY—the means of marking copy and inserts for identification, one with the other.

NEGATIVE—the film resulting from photographing the copy in the camera. The work areas on the copy are transparent on the negative, the white areas opaque.

POSITIVE—the reverse of a negative. In this case the work appears on the film as it does on the copy.

OVERLAY—the transparent or translucent covering of the copy on which instructions or work to be overprinted are placed.

DUMMY—a reasonable facsimile or rough layout of the proposed reproduction showing the positions of copy and inserts on the finished piece.

Unit 2.

MAKING THE LAYOUT

The layout is the most important factor in stripping a job correctly. It is the foundation on which a stripper builds. Accordingly any flaws in it will cause trouble in each operation following the ruling of the layout. Because of this, it is impossible to overemphasize the necessity of drawing the best possible layout.*

The first purpose of the layout is to divide the press sheet into individual units so that all work can be made square to the edges of the sheet; and so that the sheet, after printing, can be folded or cut to the specified size with the work in correct position.

---

* Many shops doing high-quality work have machines on which nearly perfect layouts can be drawn. However, by learning and carefully following the correct procedure, accurate layouts may be drawn and excellent work produced by hand. Most shops do not have a layout machine; but experienced men are able to produce excellent work without relying on machines.

The second purpose of the layout is to guide the platemaker in transferring the work to the press plate so that the work is in correct position after the plate has been clamped in the press.

In general, there are two types of layouts: the first covers the complete job; the second consists of a number of identical flats on the same job. The first type is generally ruled directly on a sheet of goldenrod paper. This paper serves more than one purpose: (1) it furnishes a support to which the negatives are attached and, (2) it acts as a mask when the papers have been cut away from the work areas of the negatives. The mask, just referred to, prevents the exposure of the blank areas on the plate. It is possible to see light through the mask, which is translucent, but the composition of the paper and coating is such that it prevents the rays from the arc lamps hardening the coating on the plate. Goldenrod stock therefore, serves two additional purposes: (a) it enables the stripper to see the work areas on the negatives when he needs to cut away the mask in these portions and (b) it prevents exposure of any section of the plate that is intended to be blank.

The second type of layout is known as the master layout. This type is intended for use on as many identical flats as is necessary. While this type of layout may be drawn on goldenrod, for better vision, it is more practical to rule it on heavy white stock, on tracing cloth, or on glass. After ruling white stock with India ink the lines may be oiled to make them more visible. In such cases the masking paper may then be laid over the master layout and the flat stripped up in the usual manner. This is done for each successive flat. When jobs of identical layouts are anticipated, the master layout can be saved and used to advantage. Ruling individual sheets for each flat on the job thereby becomes unnecessary. Another advantage that may be derived from this procedure is that after the stripper has ruled an accurate master layout he can be sure that all flats stripped on it will be correct. Master layouts, when used over a period of time, should be checked periodically, as well as when being handled.

Procedure

The following procedure for ruling a layout is standard practice and may be regarded as basic.* Each job handled by the stripper presents its own peculiar problems. It is only through experience that he can learn how much or how little ruling to do on the layout sheet.

1. Select a sheet of goldenrod slightly larger than the press plate to be used.
2. Place one of the long edges towards you on the stripping table. (This is known as the gripper edge.)†
3. Fold the sheet in half, from right to left.

   Caution: Do not crease it. Make sure the upper half of the gripper edge is exactly over the lower half.
4. Hold the sheet firmly in its folded position by means of a straight edge placed at right angles to the gripper edge.
5. Lay a steel rule near the edge of the folded sheet at right angles to the gripper edge and with the one-inch mark at the edge of the sheet. (See Fig. 3.)

   Caution: Most accurate results are obtained by measuring from the inch mark of a ruler, rather than from the end, since it is easier by this method to place the inch mark exactly.
6. Now punch holes through the sheet with a needle, measuring all vertical measurements along the edge of the rule. The first measurement‡ will be the distance from the edge of the press plate to where the press sheet starts on the press. (This is called "press gripper" and will be constant for each press model.) The remaining measurements must correspond to the layout and to instructions on the job ticket. For accurate results make all measurements without moving the ruler.

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* Printed layouts are used in some plants, more especially in those doing some sort of bookwork.

† See Unit 4 for a discussion of guide and gripper.

‡ This measurement should be given to the stripper by the press department.

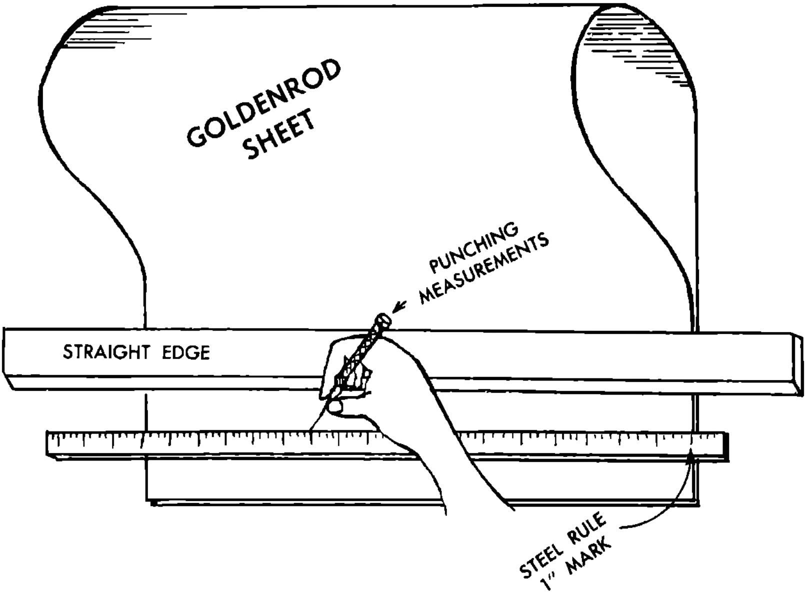


FIG. 3

7. After making all vertical measurements and punching the holes, open the sheet and rule all horizontal lines, using the punched holes as guides.
8. Now find the approximate center of the sheet, left to right, and place the straight edge on this center at right angles to the gripper. (See Fig. 4.)
9. Place a steel square, or the right angle of a steel triangle, against the straight edge and set the straight edge at right angles to the horizontal lines just ruled.

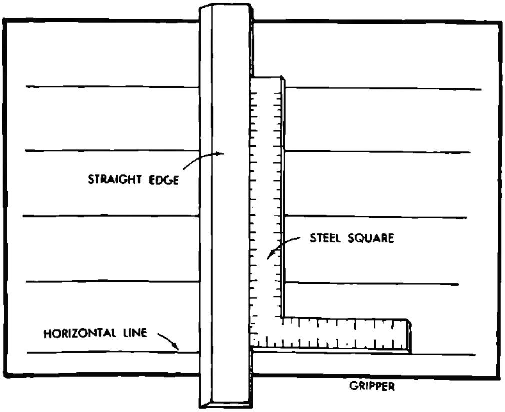


FIG. 4—ERECTING CENTERLINE

10. Remove the square and draw a line along the straight edge. *Caution:* This center line must be exactly perpendicular to the horizontal lines. The accuracy of the whole layout depends on this one factor.
11. When the center line is established, place the center mark of the steel rule on the upright center with the rule extending lengthwise along the horizontal line nearest the gripper edge, then make all of the horizontal measurements.
12. Move the rule to the line farthest from the gripper and repeat the measurements.
13. Rule in all vertical lines. *The basic layout is now completed and should be checked thoroughly.*
14. Fold the sheet from left to right and check to see that all symmetrical lines match on each half of the layout. (When superimposed these lines should form a single heavy line.)
15. Now fold the sheet from top to bottom. *If the lines match, the layout is drawn correctly. It is a good idea to recheck the measurements at various places on the layout to insure correctness.*

This concludes the basic steps for drawing a layout.

Types of Layouts

Layouts are made for the following types of work:

1. Work without trims. Such work consists of units that will cut out of the press sheet without waste, also without extra cutting after each unit has been cut from the rest of the units comprising the sheet.

2. Work with trims. Where trim (extra paper) is allowed on any side of a unit, it is trimmed away after the unit has been separated from the rest of the sheet.

   This trim is necessary for several reasons. When a job is to "bleed," space must be allowed between it and adjoining units, otherwise the printed area for one job (unit) will run into or overlap that for adjoining units. It is impossible to register and cut a job so perfectly that the cut will "bleed" one unit and leave the adjoining edge clean. If adjoining units are to "bleed" and the work on the adjoining edges is identical, no trim is necessary as a single cut will do the job. Trim is also necessary when the unit size does not divide equally into the press sheet size, in short, leaves excess paper that must be trimmed from the final sheet. There are several reasons for this. Paper is generally bought in standard sheet sizes and there are limits, both minimum and maximum, to the sheet size that a press can run. Therefore, from the available standard sizes the most suitable for the job and for the press upon which it is to be run should be selected. When the most economical size is not available make the best of the paper stock at hand.

3. Book work. For this type of work, when folding is to be done, allowance must be made for trim. Three sides of the book must be trimmed to separate the pages and to form clean edges. When a book is of the loose-leaf type and is to be collated as single pages, it is not always necessary to leave trim. But to get a clean-cut job it is good practice to allow for a final trim on all book work.

4. Combination layouts. An assemblage of several jobs in one flat which call for similar quantities, the same color of ink, and the same paper, is known as a combination. Whether or not allowance for trim need be made on such jobs depends upon the requirements.

When single-color work is being done there is seldom need for stripping on glass. When perfect register is wanted or when stripfilm or wet plate is used, it may be necessary to use a glass layout. The easiest way to get a layout on glass is to transfer it from a regular paper layout as follows:

1. Cut windows at the corners of the layout. (See Fig. 5.)
2. Tape the layout in position on the glass.
3. Rule marks through the windows, extending the lines of the layout.
4. Remove the paper layout.
5. Connect the marks to form the layout on the glass.

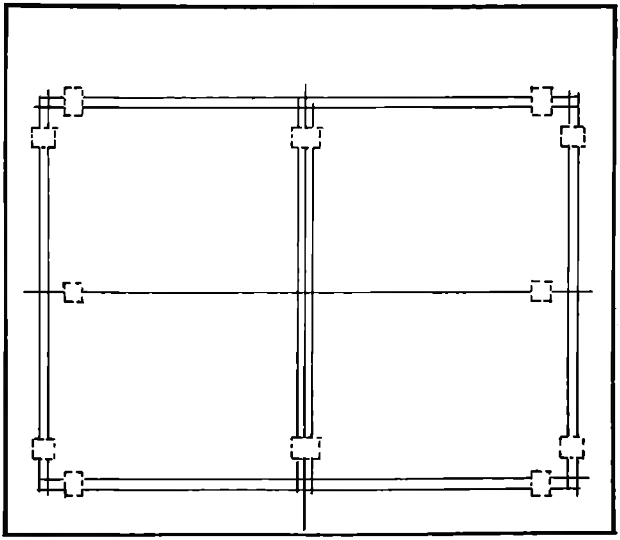


FIG. 5—WINDOWS CUT FOR TRANSFER TO GLASS

The best medium for ruling on glass is India ink.* While as many lines may be ruled in on the paper layout as will be useful, on the glass layout it is advisable to rule as few lines as possible with which to work. This is because lines interfering with the work to be printed must be removed by scraping with a razor blade before the negative or the positive is fastened in position on the glass.

OBSERVATIONS

Where the stripper intends to use the layout as is, a pencil may be used for ruling the lines. For master layouts, however, a ruling pen and black India ink is preferable.

Caution: Keep all lines thin and sharp for accuracy.

To increase the opacity of a line, turn the sheet over and trace the layout on the back.

Caution: Be sure in such cases to rule exactly over the lines of the face of the layout, thus guarding against a double line.

When ruling the layout lines the angle at which the pencil or pen is held against the straight edge should not vary. This is especially important when a thick straight edge is being used. If the ruling instrument is not held firmly against the straight edge, a line may be bowed or out of measurement. Whenever possible use the bevel edge of the straight edge for lines. Many strippers use a Scripto or Inkograph fountain pen. This gives a uniform though a rather heavy line.

For oiling master layouts, kerosene or a mixture of kerosene and a clear oil is used. After saturating the paper along the layout lines, wipe the surface as dry as possible. As the oil will gradually dry, this process may need to be repeated from time to time. A heavy white stock is most suitable for layouts. When a job is to be printed two sides (See Unit 4), the first side is stripped to

---

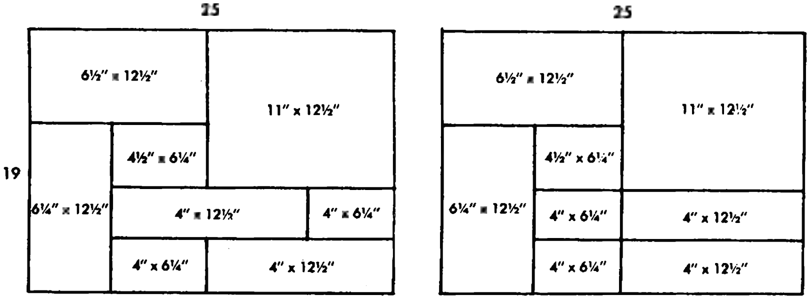
* One of the leading lithographing companies recommends the following medium for ruling on glass:

30 cc (5 lb. cut)	*Orange Shellac*
0.4 gram	*Methyl Violet Dye*
5 cc	*Turpentine*
10 cc	*Denatured Alcohol*

"This medium," the company says, "is waterproof. Lines ruled with it do not need to be deleted under linework of halftones for deep-etch, but must be deleted under halftones for albumin."

the front of the master layout sheet and the layout turned over. Then the second side, or backup, is stripped to the back of the layout sheet. This provides an accurate backup, since the flats will actually be stripped back to back from the same layout. Whereas, if the master layout sheet is not turned over, the effect is to double any inaccuracy in the original ruling.

If called upon to combine a number of jobs on one sheet, the stripper must be sure that the cutter can cut the sheet into its component parts. That is to say, cut one unit without cutting into other units on the same sheet. (See Fig. 6.)



WRONG

RIGHT

FIG. 6—WRONG LAYOUT CANNOT BE CUT WITHOUT SPOILING A UNIT

Definitions

Layout—a full scale outline drawing of the proposed press sheet dividing it into the individual units of the job and containing the measurements needed to position correctly the work areas in the unit.

Flat—the stripper's completed work; negatives or positives properly assembled on a layout and ready for the platemaker.

Press Gripper—the distance the front edge of the plate is inserted into the clamps on the press cylinder.

Trim—excess paper that is to be removed in finishing the job.

COMBINATION—used in two senses in printing. First, to denote the combining of more than one job on a flat and, second, to indicate the combining of line and halftone in one insert.

REGISTER—exact correspondence of copy with respect to position of pages, columns, lines, headings or folios on reverse sides of the same sheet.

BLEED—to cut through a printed area so that the work extends to the cut edge.

Unit 3.

IMPOSITION

The layout has now been accomplished. The stripper may, therefore, proceed to the next order of business, that of placing the negatives on the layout. The question as to which unit to place them in or how to impose them arises. For jobs other than book work, the layout diagram that accompanies the job ticket should be keyed with the copy. In the case of combinations, the units should be marked indicating the job to be stripped in them. Bookwork jobs that are to be folded when finished must have an imposition prepared for them. This may be in the form of a diagram with the page numbers correctly imposed, or of a blank press sheet that has been folded according to the way it will be folded on the folding machine with the numbers on the respective pages. This folding imposition is opened by the stripper who transfers its page numbers to the layout.

Except for very simple folds, such as 4, 8, or 16 pages, the stripper should not be required to make up the imposition. Experience has proved that the correct practice is to give the binder the pertinent facts about the job and have him prepare the working imposition. This he does in the following manner: Knowing the unit size of the finished book, he determines how many pages can be placed on the specified press sheet size and, of course, be folded practically in the folding machine. He then divides this number into the total number of pages in the book. This gives him the number of press forms or combination of forms needed. He now finds out whether the book is to be flat-stitched, or saddle-stitched, or paste-tipped, following which he compiles the necessary folded forms in their proper order and places the correct page numbers on the imposition. The side guide and gripper marks are then placed on each section of the imposition with a number to identify the flat for the stripper and also the plate for the platemaker and pressman. The simplest way to mark the individual flat is Front, 1; Back, 1; Front, 2; Back, 2; Work and Turn 3, etc., using consecutive numbers, so that no confusion will result from a missing number.

Caution: No matter how simple a fold may seem to the stripper, it is essential that he have an imposition with which to work. Even experienced men have stripped the simple 4-page fold incorrectly, resulting in considerable loss of time and material throughout the shop.

The following diagrams and instructions show standard methods for making a 4, 8, and 16-page fold.

Caution: As numerous types of folding machines are in use safety demands full knowledge of the type to be used.

The folds mentioned below are those commonly used. The stripper will become familiar with the type of fold used by the binder with which he works. Standard impositions from the binder should always be available for reference purposes.

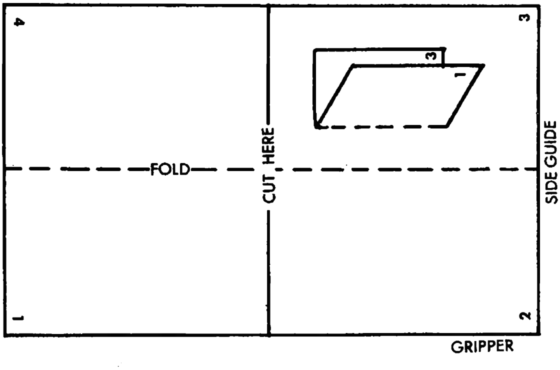


FIG. 7–4 PAGE–WORK & TURN–ONE PLATE

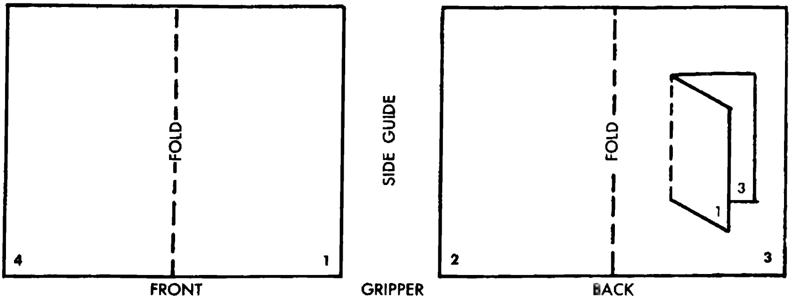


FIG. 8–4 PAGE–TWO PLATES

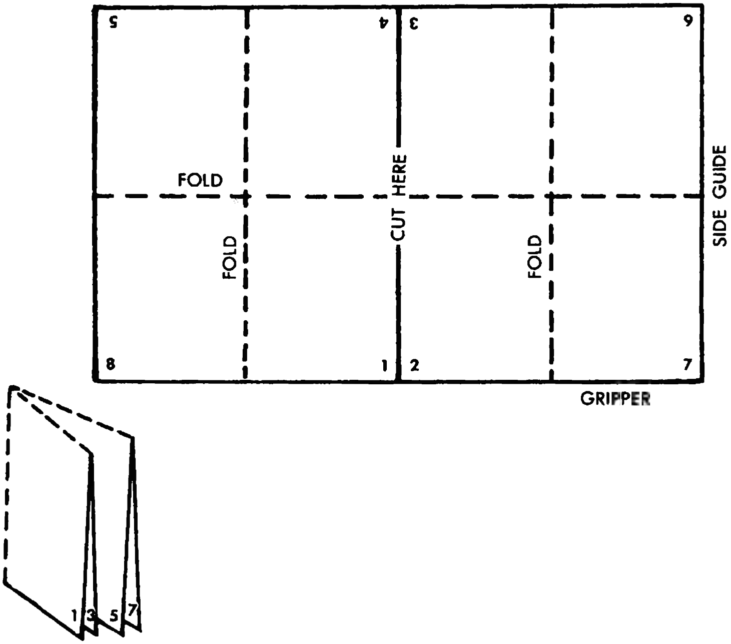


FIG. 9–8 PAGE–WORK & TURN

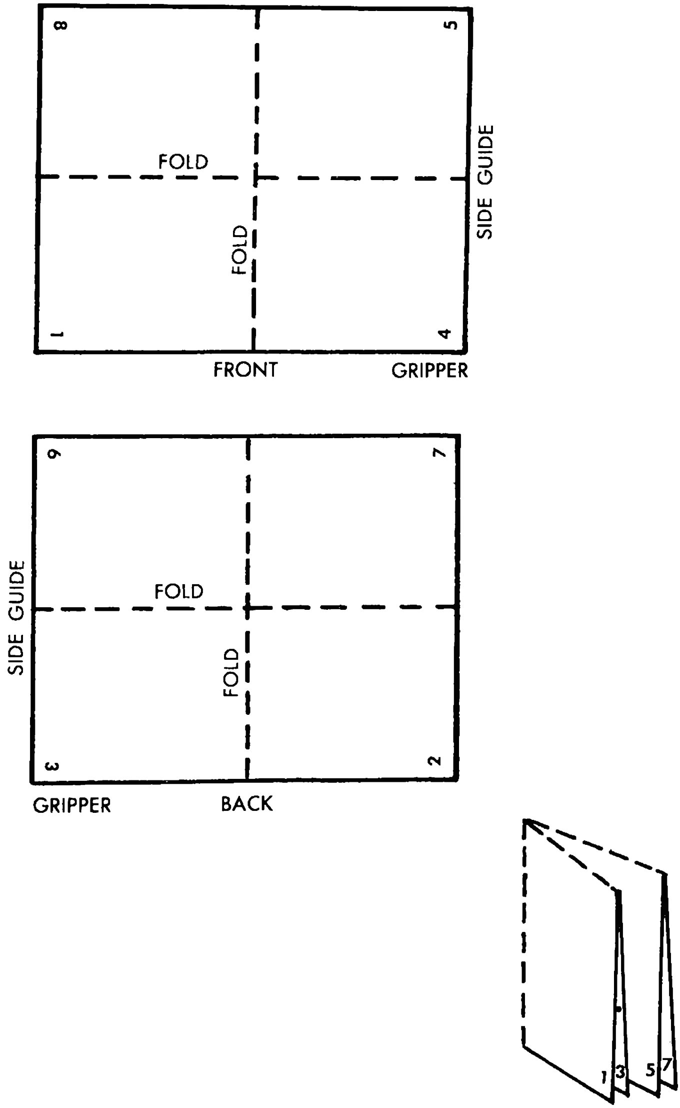
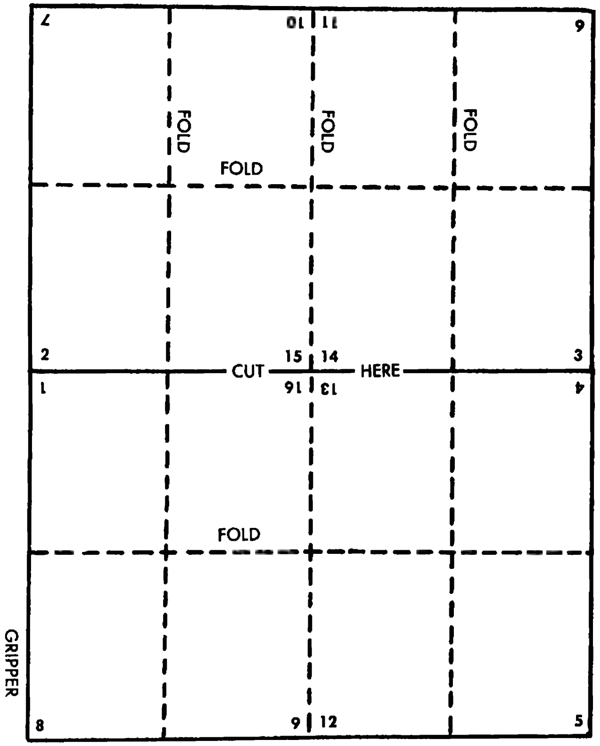


Fig. 10–8 PAGE–TWO PLATES



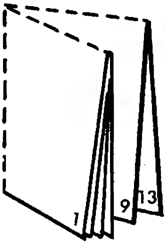


FIG. 11—16 PAGE—WORK & TURN

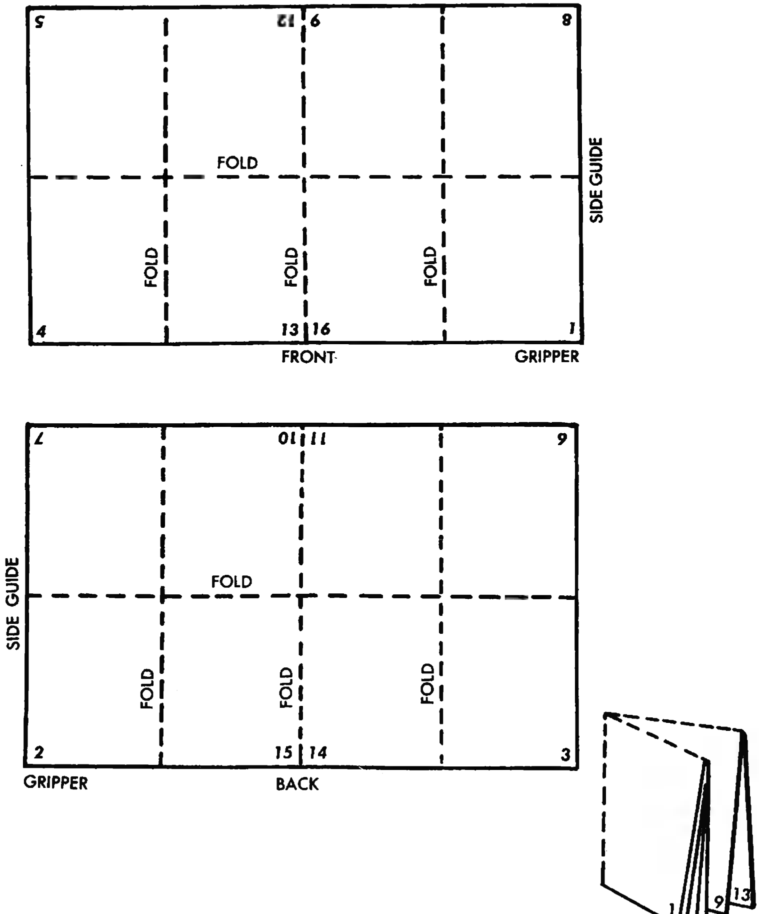


FIG. 12–2 PLATES—16 PAGE FOLD

Side Guide and Gripper Marks

As the stripper must understand the importance of the side guide and the gripper, their uses are pointed out. The side guide is located on the side of the press to which the press sheet is jogged just before it enters the press grippers. This guide serves two purposes, namely, it registers the work on the sheet correctly and it insures that each sheet is in register with every other sheet. This is brought about by jogging each sheet against the same edge, no matter how many times it is put through the press. The term guide side, therefore, denotes to the stripper that the particular edge of the sheet is jogged against the side guide. And that if the sheet is turned for printing on the back, the side guide mechanism on the press is changed to the opposite side of the press to conform with the edge of the paper that is being used as the guide side.

The gripper edge is the leading edge of the press sheet as it travels into the press. As each sheet moves up to the impression cylinder from the feeder, it is stopped at the same spot as the other sheets stopped and gripped while in this final position.

Use of the guide and the gripper marks enables the press to produce sheets of exact register. Then, by working with the same two edges of the sheet, the cutter and binder can finish the job with precision. It is unsafe to depend upon each sheet of paper stock being identical with every other sheet on the job. By using the same two edges for position throughout, the off side margins of the press sheet can vary, but the finished job will be in perfect register.

The necessity for trim allowance on bookwork has been explained in Unit 3. The actual printed area of most pages is surrounded by an unprinted marginal area. The dimensions of this area are specified on the job ticket and are thus identified:

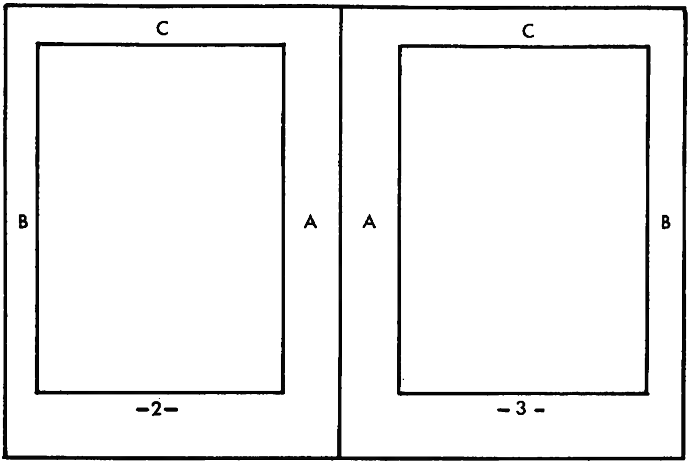


FIG. 13—MARGINS

Note that page 2, in Fig. 13 is a left-hand page, and page 3 a right-hand page; that page 1 backs up page 2 and is a right-hand page, while page 4 backs up page 3 and is a left-hand page. The margin marked "a" is called the bind margin; that marked "b" is called the outside margin; and that marked "c" is known as the top or head margin. The margin containing the page number is called the bottom or foot margin. If the size of two adjoining margins is specified, the position of the work on the page is established. When the dimensions of the four margins are specified, the work should be kept within these margins. The two margins generally specified are the head and outside margin. As pointed out elsewhere (see Unit 5), these margins should be ruled on the layout.

Before the stripper attempts to use the binder's or the working imposition he should know what it means to work in reverse. To put this in another way, when work is in reverse the negatives on such an imposition are to be attached to the flat in the unreadable position with the emulsion of the negatives towards the stripper. The emulsion must be on the underside in the finished flat so that the platemaker can put it into direct contact with the press plate. If perchance the negative is made incorrectly, having the emulsion on the readable side, then the thickness of the film will be between the emulsion and the plate. This allows the rays of light from the arc lamps to spread; therefore the work will come up heavier than it should on the plate.

Should the flat be stripped readable—with the emulsion of the film against the goldenrod, then when the mask is cut away from the work areas, the line produced in the emulsion by this cutting would have to be opaqued out. To insure good contact under such condition in the platemaking department, it would be necessary to cut away a larger area of the mask, thus leaving a larger portion of the negative to be spotted. By stripping in reverse such trouble is eliminated. Difficulty in working in reverse may be encountered at first. But in time the stripper will find that he can work that way with ease.

Layouts should be drawn in reverse from left to right, or drawn as the diagram layout, then turned. The negatives are then stripped to the back.

The page numbers from the imposition are now transferred to the layout sheet. The gripper edge of the imposition is placed on the gripper edge of the layout with the front side of the imposition against the face of the layout. The page numbers are then transferred from the imposition to the flat. When checked against the imposition, the page numbers on the flat should read in reverse from left to right. After the negatives have been stripped and the flat turned over into readable position, the finished flat should correspond to the imposition.

OBSERVATIONS

It is good practice to number impositions in the lower outside corners of the pages and underscore each number because this shows the direction of the page and prevents misreading of the numbers.

A trim of ⅛″ is a workable trim allowance. If less than this is allowed the book is likely to have some uncut pages.

If a job is printed only on one side of the sheet and neither side is specified as the bind, the page is considered a right-hand page with the bind at the left.

On a saddlestitched book of more than 32 pages, attention must be given to the possibility of "shingling," (creeping of the center signatures) of the book. Due to the thickness of paper at the bind, the center signatures will extend beyond the outer signatures of the book. As a result, when the sheets are trimmed, the outside margin of the center signatures becomes smaller and spoils the uniform appearance of the book. To compensate for this, when stripping the inner signatures, the stripper should increase the outside margin dimension. That he may know how much to add to the outside dimension, many plants now supply a dummy book of the stock to be used thus enabling him to measure the distance each signature extends beyond the adjoining signature.

Caution: Should the bind margin be small, or the book be of the type that requires punching, it is sometimes found that by increasing the outside margin the bind margin becomes too small. In such cases the same outside margin must be carried throughout with the result that when trimming the books, whatever comes must be accepted.

Some types of books are trimmed on all sides for binding. These are of the loose-leaf variety and are bound by using loose-leaf binders, plastic or spiral wire bindings. Sometimes these are run as single sheets, without trim, and collated as such. When folded signatures are used, an allowance must be made for taking a trim along the bind.

When a book has unnumbered pages at the beginning, it is well to identify them on the imposition as pages a, b, c, etc., and to have page "1" of the imposition correspond to page "1" of the book. If the imposition is numbered, starting with "1" it will be necessary to key the pages of the book correspondingly. The former method is the least confusing and allows the least chance for error.

Definitions

SIGNATURE—a printed sheet folded as one unit and forming a section of the book or pamphlet.

SADDLESTITCHED—denoting that the pages or signatures of the book are inserted in multiples of four, and stitched to the center through the folded back.

SIDE OR FLAT-STITCHED—denoting that the pages of the book are piled one upon the other and stitched through, from front to back.

SEWED BINDING—denoting that the pages of the book are held in position by sewing at the bind.

SHEETWISE—the printing of each sheet of a signature, first on one side and then on the other side, from another form.

WORK AND TURN—having all pages of a signature imposed in one form, so that when the sheet is printed, then turned over from left to right and printed on the other side and cut, two complete copies result.

ONE-SIDED JOB—printed on one side of the sheet only.

TWO-SIDED JOB—printed on both sides of the sheet, i. e. backed up.

MARGIN—that part of a page outside of the main body of printed matter.

IMPOSE—to arrange in the order specified by the imposition or layout.

COLLATE—gather together in proper sequence the signatures or pages of a book.

FOLIO—the page number. Unless otherwise noted, even folios are on the left-hand pages and odd folios on the right-hand pages.

BACKBONE—the edge along which the sections of a book are secured in binding

Unit 4.

PREPARING AND STRIPPING NEGATIVES INTO THE LAYOUT

Thus far we have dealt with the steps preparatory to the actual stripping of the flat. The last step, before actually attaching the negative to the layout, is that of preparing the negatives.

Types of Bases

From the stripper's viewpoint, the only way in which negatives differ is in the type of base that supports the emulsion. No matter what base is used, the emulsion in all cases carries the image. The support upon which it rests could be any suitable translucent substance. The most common base is film (acetate) which is transparent and of workable thickness. Some of the advantages of acetate are: uniformity and transparency, the fact that it will lie flat and can be easily handled and can be black-spotted. Finally strip-film, wet-plate, or thin-base inserts can be applied to it. The disadvantages of acetate are: its tendency to change size with humidity variations and the need for careful splicing to avoid fit and contact trouble.

The next most common base is paper. This type has more disadvantages than its one advantage, cheap cost, can counterbalance. These disadvantages are: waviness, curl, not holding its size, lack of transparency, necessity of oiling to keep the plate exposure within reasonable limits, inability to lend itself to sharp, fine detail, difficulty in handling, the fact that halftones cannot be shot on it, and unsuitability for use in combination with any of the other types of negatives.*

Glass is also used as a base. Two types of emulsion are supported by glass, the wet plate and the dry plate. Wet plate comes to us from the photo-engraver and is used less extensively than it was a few years ago. The wet plate is prepared by the photographer when he needs it, and exposures are made while the emulsion is still wet. Dry plate is a manufactured product, purchased like film, from the manufacturer. The advantages of wet plate are: Being emulsion coated with rubber cement and collodion, it is practically of the thickness of the emulsion itself. Then it can be moved from one base to another, and can be turned (reversed), since its thickness is a negligible factor. Finally, it can be spliced readily and will not change size. The disadvantages of the wet plate are: It is fragile and must be handled with extreme care; the stripper must have considerable experience in order to handle it to best advantage; it is slow to work with and necessitates the use of cumbersome glass flats which cannot be filed as readily as paper flats with film negatives.†

The dry-plate method is used for continuous-tone work or when the pressplate is made directly from the dry plate with little or no stripping done. Strip film is similar to wet plate in use. The emulsion in this case is supported on a base from which it can be peeled wet or dry. It is difficult to handle without considerable experience.

Thin-base film is exactly what the name implies, an emulsion on a very thin film support. It is much more fragile than regular film and generally is used only when we wish to reverse the image by shooting through the back, or when the negative is to be used in contact with another negative, making a double thickness of film.

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* Notwithstanding these facts, many plants find paper negatives not only economical, but also efficient for certain kinds of work.

† Some claim that the wet-plate film does not hold its size; also that this disadvantage can be overcome by double coating it.

Another type of base is the one called transloid by the trade. This base originally came from Belgium, but, since the start of the war, attempts to produce it have been made in this country. With respect to cost and use it falls between paper and film. It has the disadvantage that the emulsion tends to peel from the support when the negative is cut. Accordingly, when any splicing or inserting is to be done it is decidedly hard to handle. As the majority of plants use film for single-color work at the present time, attention will be given chiefly to stripping this type of negative and positive.

Negative Trimming and Placing

The negatives must, of course, be trimmed. By comparing the work size with the unit size, the stripper can judge how close to the work he must trim so that adjoining negatives will not overlap. Wherever possible, he must leave ¼″ or more of film beyond the work area. Large shears should be used to trim all the negatives. If the job is a book, the negatives should be sorted numerically. This can be accomplished speedily by laying them out in tens, then sorting the piles of tens individually.

When a job is to bleed, or has little room between negatives, one should never try to trim the negatives to the unit size. The correct method is to wait until the negative is in position on the flat, then trim it with a razor blade and straight edge.

As explained in Unit 4, the dimensions of the margins to be used are given. When stripping a job, such as bookwork, where the margins are the same on every unit, rule such margins on the layout and strip the work to them. Unless otherwise specified, the dimension given refers to the finished job and should be measured from the trim line. If these measurements have not been made in the original ruling of the layout, the best method is to take a pair of dividers, set them to the size of the dimension, then measure the margin line by placing one leg at the trim line and punching a hole in the layout where the margin line is to be ruled. Do this at both ends of the trim line and connect the holes with the margin line. Should there be a master layout to use for jobs of the same unit size but of different margin size, the margin lines can be ruled on the masking paper of the individual flats. By so doing the master layout will not become a confusing mass of different margin sizes.

The negatives can now be distributed to their respective units on the flat and put into their proper positions within the unit. To do this, lay the topmost line of the negative along the top margin line and the outside of the work along the outside margin line. By manipulating the negative back and forth the lines through the transparent portions of the negative can be readily seen.

To be more accurate than is possible by sighting through the negatives, score the negatives before distributing them on the flat. To do this, take a small, steel, straight edge and lay it along the line of type that is to be used as the top margin, then with a sharp needle scratch a short line into the emulsion where the steel edge crosses the edge of the negative.

Caution: Do not scratch into the work.

Repeat this along the outside edge of the work and you will then have marks to match the margin lines on the layout (See Fig. 14). If the line of the work corresponding to the margin's line is too short to permit a feeling of assurance that the score marks will be true and square, use one of the following methods:

1. Select a line from the work, long enough to be the guide, and rule in a line corresponding to its position in the unit instead of the actual margin dimension. This new dimension can be determined by taking the distance between the margin and the selected line, and adding it to the margin dimension. (See Fig. 15.)

2. Place the triangle along a suitable long line in the work, then bring the straight edge against the base of the triangle.

Now, holding the negative and the straight edge in this position, move the triangle to the top margin line and score. (See Fig. 16.)

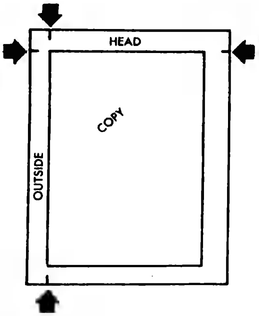

FIG. 14—ARROWS INDICATE SCORE MARKS IN NEGATIVE

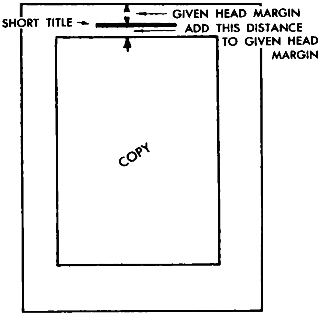

FIG. 15

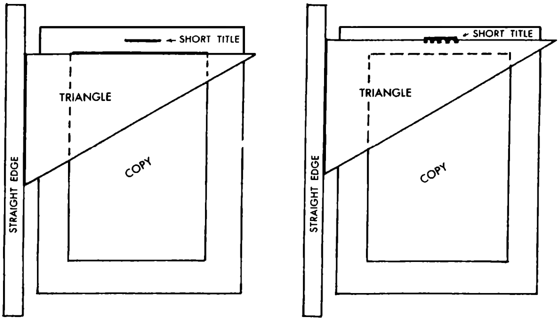

FIG. 16

Negative Taping

The negative is now in position on the flat and must be attached so that it cannot shift. The best material to use for this is cellulose tape. The stripper will find it advisable to prepare the cellulose tape stickers in the following manner:

1. Take a piece of ¼" ground glass about 8" x 12" and lay ½" cellulose tape (red preferred) in strips across the ground surface about 1/16" apart. Smooth the tape against the glass with the thumb as it unrolls.
2. Using a small straight edge, cut the tape with a razor blade at right angles to the length of the tape, making cuts ¼" to ⅜" apart. This will produce stickers ½" x ¼" that can be lifted easily from the glass with the razor blade.
3. Paste pieces of cardboard or blotters about 1½" square by ¼" thick at the four corners of the underside of the glass. These will keep the negatives from becoming scratched and will make it easy for the stripper to pick up the glass.

If a ground glass is not available, it is better to use a plain piece of glass than to put the tape down on the stripping table for cutting. This is recommended because the stripping table will become marred in a short time with marks which show through the layout and confuse the stripper. As stickers will not lift easily from a plain glass surface, the ground glass is recommended.

To attach the negative to the mask, put a sticker at each corner and one in the center of each long side. As each sticker is put into position, press it down with the finger to be sure that it is firmly attached.

The stripper must use his judgment as to the number of stickers necessary. Only enough to do the job should be used and these should be placed no closer to the work than is necessary. By keeping stickers at least ⅛" from the work on the negative, worry over bad contact in the platemaking vacuum frame can be avoided.

When stripping a combination flat, the stripper will have varied margins on the various units. He does not necessarily need to rule these on the layout, but, by placing the negative into approximate position in its unit, he can then adjust it to proper margin with a small ruler.

Different methods of squaring the work within the units are used:

1. Measuring the distance from the extremes of a line on the copy to a line on the layout and moving the negative until there is an equal measurement at both ends. This can be done with a ruler, with the dividers, or by making marks on a strip of paper.
2. Placing one corner of the work in position by measuring, then fastening it with a sticker. Now place a triangle along a line of the layout, parallel to the line of copy to be squared and place the straight edge against the base of the triangle. Then move the triangle along the straight edge until it coincides with the line to be squared and move the negative as much as necessary, pivoting on the fastened corner until the work follows the edge of the triangle. Fasten the negative in this position with a second sticker.

To center the work means that work is to be centered within the unit. The terms, centered left and right, or centered top and bottom, are self explanatory. These operations can be carried out by actual measurement with the ruler or by using the adjustable dividers, shifting the negative until the measurements are equalized.

The term "as copy" means that the position of the work shall be the same as on the copy furnished.

It is the practice of some camera departments to place black pieces of paper under the corners of the copy, or to shoot the copy against a black background. The negative then has black corners showing against a transparent area. These can be matched to the corners of the unit on the layout for position.

When the aforementioned is not followed, the negative can be stripped as copy by duplicating the measurements of the copy margins on the layout. This may be done in two ways: First, place the negative on the copy so that the work coincides; hold it firmly and, using the copy as a guide, flop it into position on the layout; then remove the copy and fasten the negative. Second, place the copy in position, face down, on the layout; punch holes in several places through distinctive points on the copy; fit the corresponding points on the negative to the holes just punched.

If the copy has crop marks at the corners to denote its position, merely match these to the corners of the unit and fasten the negative to the layout.

Caution: When trimming negatives be sure not to cut away corner marks, crop marks, or anything needed later when stripping that negative. Furthermore, make sure that the work on the copy is square, check it and any questionable portion of it. The amount of straightening the stripper should do to sections of the job depends upon the importance of the job and the policy of the shop in which he works. To make the best-looking job, every portion of the copy should be as square as possible with the edges.

If the copy that is to be stripped "as copy" or "as crops" is larger or smaller than the unit size specified (assuming it has been shot correctly in the camera), center the difference, so that the work appears on the unit in the same relative position as on the copy.

"Optical center" is one instruction term sometimes used. It means to center the work left and right with its position such that the top and bottom margins are pleasing to the stripper's eye. Generally the bottom margin is about 1½ times the top margin.

When centering work, the stripper is occasionally confronted by a job where there is a line or two of type extending considerably beyond the main body of the work. If the instructions are not specific, the stripper may safely center the main body of the work, letting the long lines extend into the margin as necessary. He will acquire a "feel" for good spacing and such jobs will automatically fall into their proper place.

It is sometimes found that the folios or headings on a job will not back up, or that they are sent in separately from the body matter to be stripped into place on each page. The stripper must then rule the position of these on the layout by making a line for the heading and a cross-mark for the page number, using the vertical member of the cross for the center of the page number. By turning the layout over when stripping the back-up flats he can make sure that the page numbers and the headings back up properly.

There are two particular problems that the stripper must battle constantly. If he fails to do this, the plate may have to be remade. For quite often the trouble in question does not show up until the plate is on the press, in which case make-ready and platemaking time, as well as material, have been wasted. These problems are:

1. Contact trouble. This occurs in instances when a sticker is too close to the work; where negatives overlap; where opaque is applied too heavily; where the emulsion side of the negative is away from the plate; where the insert is stripped incorrectly; and where too many thicknesses of masking paper are used. In producing the job care must be taken that none of the above conditions prevail when the flat is sent to the platemaker. Because under such conditions the emulsion does not come into perfect contact with the plate in the vacuum frame and the light from the arc lamps may spread between the negative and the plate. If this spreading occurs the work is heavier than it should be, thus causing the halftone areas to fill in and generally to give a poor reproduction of the copy. On large halftone areas this lack of contact can be detected in the frame by the presence of air bubbles under the negative. On line work or smaller negatives, however, this is not the case. When a plate with such fault is produced, the platemaker

can sometimes develop it beyond its normal development and sharpen to some extent the heavier image. But in doing this, he weakens the image, and so cannot be sure that the work will not pick up again on the press or that the image will not "walk off" in a short time. The best practice is to examine the flat carefully before giving it to the platemaker. If contact trouble has occurred, it is better to correct the flat and make the plate over, rather than try to worry through with an inferior or doctored plate.

2. Failure to allow sufficient gripper margin. Gripper margin is the distance from the gripper edge of the sheet to where the press can begin to print. This area is used by the press grippers to hold the sheet in proper position on the impression cylinder while the image is being transferred from the blanket to the sheet. The amount of gripper margin in distance varies with different types of presses. Therefore, the stripper must know what allowance is needed in each case and must make sure that no work falls within this area. If an oversize sheet is to be printed (one larger than the limits set by the press manufacturer), an accurate measure must be made of the extremes of the work to be printed and the press limits, to make sure that all work falls within the press-printing area. Ordinarily it is possible to bleed the work off the ends and back edge of the sheet.

Cutting in Marks for the Platemaker and the Pressman's Use

Now that all negatives are attached to the flat, cut in the marks that will be used by the platemaker and pressman to position the work. The following marks are essential and should be made with a double cut of the razor blade, removing a sliver of the mask, so that the mark will not close up when pressure is applied in the vacuum frame. By holding a straight edge along the line where the mark is to be cut and cutting with a sharp razor blade, held on the first cut upright against the straight edge and on the second at a slight angle, the sharp, thin slot necessary for transferring a satisfactory mark to the plate will result. These slots should be ½″ long.

1. *Center marks* should be cut along the center lines and in such positions that they will bleed off the sides and back edge of the sheet. The center mark should then be cut at the gripper edge far enough up to print.

   Caution: A wedge-shaped piece should be cut away at the gripper edge of the flat to identify it as the gripper edge for the platemaker. One side of this should follow the center line so that the flat can be easily centered on plate. The other side should be cut at an angle large enough to result in a distinctive wedge being removed from the mask. If done correctly, this will print on the plate and identify the gripper edge to the pressman.
2. The cylinder guide marks (variously called ½″ or ⅜″ marks, etc.) should be cut at a specified distance from the gripper edge of the sheet. This distance must be the same on every flat. If it is specified as ½″, the marks are to be cut at each side of the flat ½″ up from the edge of the press sheet. The marks are then extended to the edge of the press plate. Their purpose is to enable the pressman to match them to corresponding marks on the press cylinder. Because of this each plate can be put in the same position on the press, thus keeping to a minimum the necessity of shifting the cylinder. When this system is not used, there being no guide, each plate must be inserted into the clamps to varying depths and the cylinder turned to secure the correct lay on the press sheet. Fig. 17 shows the correct position for all marks.

Turn the flat over and remove the mask from the work areas by cutting it out with a sharp razor blade.

Caution: Be careful to cut through the mask only and not through both the mask and the negative, also to cut close to the work.

Wherever there is a blank area on the negative, leave the

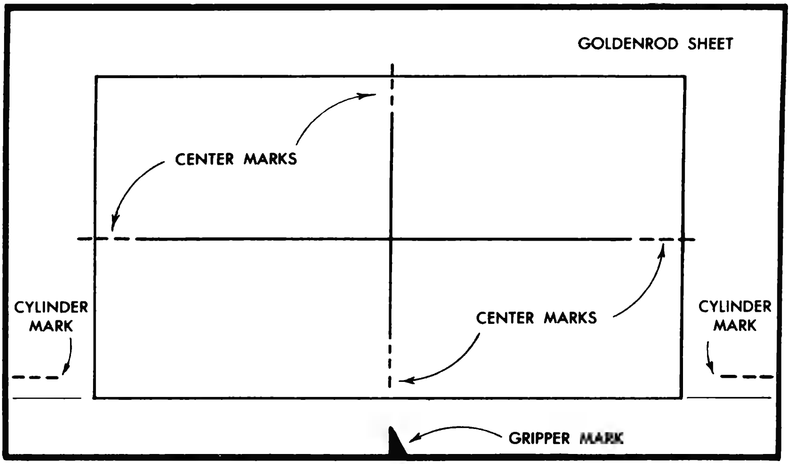

FIG. 17—CUT MARKS

mask so that the least possible opaquing is necessary. Keep the razor blade sharpened by rubbing it occasionally on the whetstone and you will find that the unmasking operation can be handled quickly and cleanly.

There is little difference between the technique of stripping film negatives to a glass and stripping them on paper. In the case of glass the negatives must be fastened with rubber cement, if an extremely accurate job is wanted. To cement negatives, take the following steps:

1. Place the negative in position in its unit as in stripping on paper.
2. Attach one long edge of the negative to the glass with four or five large stickers.
3. Using the applied stickers as a hinge, flop the negative back and with a razor blade, scrape away such portions of the layout lines as will fall across the work.
4. Brush the thinned-out rubber cement (thin with benzol or thinner) smoothly over the entire area of the glass to be covered by the negative, lay the negative in place, and

squeegee the excess cement from under the negatives with three or four pieces of blotter cut about 3″ square.

Caution: Always work from the center to the edges of the negative.

5. Check to be sure that the negative has not shifted during the operation.
6. Remove the stickers and excess cement from the glass.

To mask the areas not covered by the negatives cover the entire glass with a sheet of masking paper and fasten it to the glass along one edge only. To protect the emulsion while the mask is being cut away, take a medium sized sheet of clear acetate and slide it between the mask and the negative. Since the mask in this case will be between the negative and the plate while the plate is being made, remove as much of the mask as is not needed, so that there will be good contact. After cutting out the mask, fasten it securely on all sides. On very close work tin foil can be cemented between the negatives to act as the mask. A daub of opaque where the marks are to be placed will serve as material in which to cut in the marks. Moreover this will not shift as the mask might. If the negatives extend over the marks, they can be scratched into the negatives.

Stripping for Deep-Etch Platemaking

Stripping positives for deep-etch plates presents a few additional problems to the stripper. First of all the positives should be checked to see that the emulsion is on the unreadable side. In making a positive the readable side of the negative should be against the emulsion of the unexposed film in the contact frame as this will assure a contact positive with the emulsion on the unreadable side. It follows that when stripping negatives for the making of contact positives, the stripper should strip them face up (readable) on the mask.

To assemble the positives correctly either butt the edges of the individual positives together and fasten them with tape or strip them upon a piece of acetate or glass to make the flat. As deep etch is the reverse of the albumin process, the print from the plate will exactly duplicate the opaque work areas on the flat while blank areas on the plate will correspond to the transparent areas on the flat.

When planning to butt the positives together, strip as many negatives into position on a mask as will fit into the contact printing frame, then butt the resultant larger positives together. For example, should the final flat call for 16—8½″ x 11″ pages, the stripper might make four positives of four pages each.

Caution: Since the negatives are to be stripped readable for contact positives, do not reverse the layout or imposition as when working for albumin. Use layout and imposition in the same position as they will appear on the press plate.

When butting positives together to form a flat without other support, do not trim them first. Rather place them on the layout in their proper position and fasten the outside edges to the layout. In such case the positives must overlap where they are to be joined. Then laying a straight edge on the center of the overlapped area, cut through both positives with a sharp razor blade and remove the excess strips of film. The positives should now lay edge to edge without overlapping or buckling. Tape them together with a strip of tape. It is best to strip this type of flat readable, so that the tape will not be on the emulsion side.

To strip individual positives on a support, such as acetate or glass, use the same methods as in stripping negatives, but in this case there is no need to mask the flat. Marks for deep-etch work are ruled on the flat with a ruling pen, using either India ink or opaque. These marks will appear on the plate exactly as ruled on the flat.

OBSERVATIONS

When cutting a negative with a razor blade it is not necessary to cut completely through the negative. By making a cut through the emulsion and partly into the film base, the negative, when bent, will snap along this line, or by lifting at the edge it will separate along the line of the cut as the sections are pulled apart.

The person cutting out the flat should be careful to pick up all pieces of the mask and dispose of them. This is also true of slivers made when cutting the marks. Due to static electricity these small pieces of the mask are likely to stick to the negatives. If they do and happen to cover a portion of the work, a spoiled plate will result.

On units that are to bleed, allow ⅛″ of work beyond the trim line whenever possible. A cleaner job will result if we always take a trim to bleed the job rather than let it bleed from the edge on the press.

Transparent cellulose tape generally is used when stripping positives. Some platemakers, however, prefer flats stripped with red tape because the red-tape areas show up distinctly on the plate, thus enabling the platemaker to see such areas more readily when staging out. Transparent tape areas on the other hand are not always visible after the plate exposure, yet such areas will pick up and show as dirty areas when the plate gets to the press.

If in doubt when determining the emulsion side of the negative or positive, make a small scratch on the dull side.

Caution: Never mark the emulsion side because such marks will print.

All negatives and positives should be cleaned before they are stripped down on glass or acetate. Care also should be taken that no foreign matter gets between the support and the film. Benzol or a similar solvent applied with a clean rag and then wiped dry with another rag will clean them satisfactorily.

EMULSION—a suspension of light sensitive silver salt, generally in a gelatin solution used for coating plates, films, etc. Also the coating when dried.

BASE—a transparent support for light-sensitive coatings. Examples: film, glass, paper, etc.

HALFTONE—the term denoting pictures in which the gradation of tone is reproduced by a graduated system of dots, usually nearly invisible to the unaided eye and produced by the interposition of a screen during exposure between the film and the object.

CONTINUOUS-TONE—pertaining to pictures in which the gradation of tones consist of a continuous range of tonal density from the highlights to the shadows [illegible] may be obtained by means of an ordinary photographic or amateur camera.

MARGIN-LINE—the line ruled on the layout to denote the limits of the work on the page.

TRIM-LINE—the line ruled on the layout to denote the limits of the finished page size.

Unit 5.

INSERTS

Thus far we have concerned ourselves with stripping single negatives into [illegible] unit, or, putting it another way, with that portion of the stripper's work dealing with line copy, where the entire copy for the plate is prepared [illegible] one unit. Now we must consider copy that is to be composed of several pieces of negative that are to be combined in one unit. Often illustrations that are to be inserted in the text matter must be photographed in [illegible] different scale than the text copy. Because of this some of the copy cannot be assembled as a unit, thus making it necessary to assemble the several negatives on the flat.

Inserts may be line, halftone, or [illegible] combination of the two.

Line inserts, if of the correct size, can be pasted up with text matter and shot as a unit. If they are to be reduced or enlarged to fit a specified area, they must be stripped in negative form. To understand why halftone inserts must always be stripped in, it is necessary to know the difference between halftone and line work.

When reproducing line work, the printing areas should be solid black. When reproducing pictures where gradation of tone is important, it is necessary to employ a method which produces something close to a facsimile of the picture. But as presses can print solid color only, what is known as the halftone process is used to produce what seem to be tones of the solid color. This is done by interposing a screen between the copy and the film in the camera, thereby producing a negative in which the light areas (highlights) on the copy appear as areas of small transparent dots on the negative, and the dark areas (shadows) appear as large transparent dots on the negative. On such negatives the intermediate values also have their characteristic dot formations. When these dots are transferred to the plate and then to the press sheets, the result is a variety of printed areas whose tone values are due to variously sized dots. The size of these areas is such that the eye does not see them as dots. It sees only overall effect of color, depending on the proportion of the color printed to the white paper stock. The lighter-color values correspond to the smaller dots on the print; the stronger values to the larger ones.

Combining Line and Halftone Negatives

Obviously since line negatives must be made without the screen and halftone negatives with it, a way must be found of combining the two types of negatives and securing the desired result on the plate. The various methods of bringing this about are discussed below.

The most common method of combining line and halftone negatives is to splice them together on the layout. To do this strip the main negative into position on the flat; then, with a razor blade cut away that section of the film which occupies the position intended for the insert. Now trim the insert and put it into the position indicated by the keying of the copy and dummy. Square it with the text and fasten it into place with stickers, taking care that they are kept as far from the work, particularly if it is a halftone, as is feasible. This method of stripping in an insert can be used only when the insert is either line or halftone, or where the line and halftone are separated by enough space to allow for cutting in such a way that one unit can be fitted into the other.

When we have an insert in which line and halftone are to be combined in such form that it is impossible to splice film to film, other methods must be employed. One of these is using the surprint which calls for a double printing operation by the platemaker. According to this method when the flat has been stripped up in the usual manner, the line shots of the inserts are cut into position. Then the mask is removed and the flat turned back to its original stripping position. A piece of goldenrod the same size as the flat is then placed over the flat and fastened securely on all sides so that the position of the surprint cannot change. The halftone parts of the inserts are now registered with the line shots that have been cut into position on the master flat. Cross marks about 1″ long are cut in three or four widely separated places right through both masks with a single cut of the razor blade.

Caution: Be careful to cut across two sides of the cross and remove the corners so that triangular openings appear.

The platemaker exposes the key flat on his plate, then registers the surprint by the cross marks and exposes the surprint. In this way a line and a halftone negative are placed in the same area on the plate.

It is sometimes necessary to get more than one surprint on the plate. In such cases after the key flat has been stripped up, as many masking sheets as needed should be placed over it and register marks cut through the entire layer. The surprints can now be stripped up either by registering them with the key flat or with one another.

The surprint is also employed when the job calls for a large number of inserts. Time can be saved by surprinting these inserts rather than by trying to cut them into the main negative. In instances of this character do everything possible to get all halftone negatives on the one mask and all line negatives on the other, as this will enable the platemaker to adjust his exposure time much more successfully.

Line lettering that is to appear in reverse, such as white lettering against a halftone background, is produced by assembling all the lettering in negative form in its proper position; then making a contact positive large enough to cover the entire halftone area to be exposed. This contact positive is then placed in direct contact with the halftone negative and the two are stripped into position as a single insert. The line work, which is opaque on a transparent background, will act as a mask and block out its shape in the halftone. The emulsion (unreadable) side of the positive is placed against the face (readable) side of the halftone negative. It is more important that the halftone negative be in direct contact with the plate than it is for the line. In such cases the positive must cover the entire halftone because an edge cutting across the halftone casts a shadow which shows as a streak across the halftone on the plate.

Still another method of combining line and halftone negatives is practiced. This method calls for the use of a contact printing frame in the camera department. The procedure follows: The stripper prepares the flats just as he would for the platemaker though in this instance they are in small enough sections to fit into the smaller contact printing frames found in dark rooms. The photographer fastens the key flat to the sheet of unexposed film, scratches the register marks into the film with a needle or razor blade and makes the first exposure. He then registers the surprint to the marks and exposes this flat. The result is a positive containing all elements of the job. From this the contact negative is made.

If the job is to be done deep etch, the contact positive can be made in several ways. The job can be stripped readable, surprinted with the inserts, then combined in the positive. It is also possible to make a positive containing the line work only, the halftone positive being separate on thin base film and stripped over the line positive in register so that the emulsion of the halftone will come in contact with the plate.*

Smaller units that have line and halftone work to be combined may be assembled so that the photographer does not have to register both with marks. This is accomplished by stripping the key flat and its surprint into position, then attaching the two to a larger sheet. In such case the long edges should be hinged so that the person making the contact positive can attach his unexposed film, emulsion up, to the blank sheet. He can then swing one negative into position over the film to make one exposure, then swing back the first negative; then finally swing the surprint negative into place and make the second exposure (See Fig. 18).

When this procedure is followed carefully by both the stripping and camera departments, very close register can be obtained in the positive.

Caution: When a contact negative is to be made from the positive, arrange the negatives so that the emulsion will be in contact with the emulsion of the unexposed film. When the positive is to be used for deep-etch, the readable side of the negatives should be put into contact with the emulsion of the unexposed film.

Using Strip Film and Wet Plate Films

Some shops use strip film or wet plate for inserts. These are more difficult to handle than film and are not used too generally. However, strippers should become familiar with their use, so that when they encounter either they will know how to handle them. Constant handling over a period of time is necessary in order to become accustomed to using this type of insert.

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* For printing down more than once on a deep-etch plate (in the vacuum frame) the following procedure has been suggested: Rule layout on glass or on acetate. Strip up one unit of the job on another piece of acetate that is slightly larger. Establish standard markings and transfer markings to glass layout. Now with all areas on the glass, except the markings protected by goldenrod, proceed to "shoot" the plate. The result of the first "shot"—one unit with the marks—can be used for the rest of the shots. If any of the book is not wanted on the final plate, this can be eliminated on the master glass through protective measures.

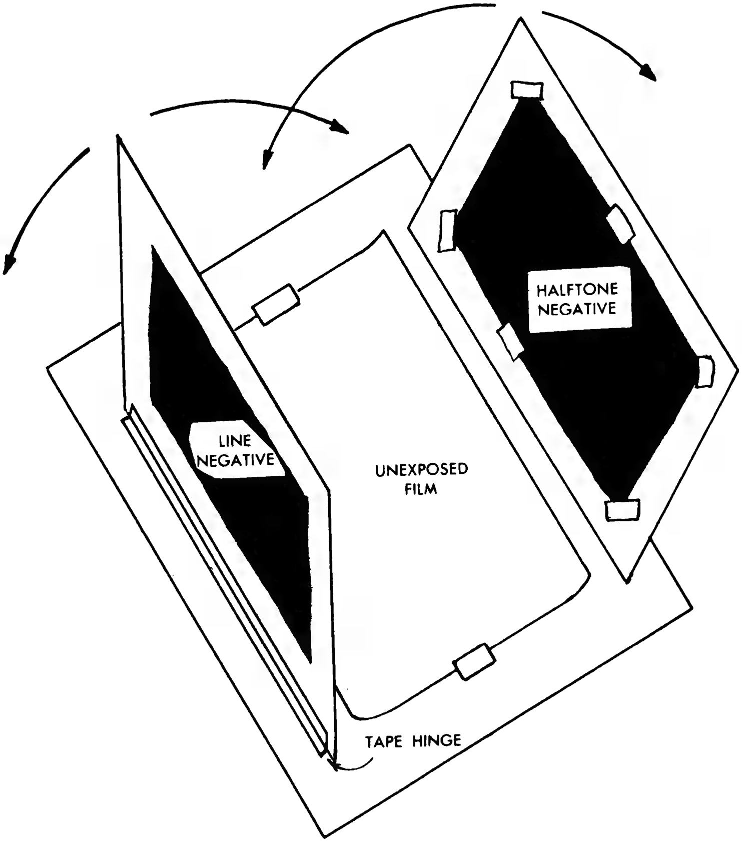

FIG. 18—HAND METHOD OF MAKING A COMBINATION POSITIVE

The best method of handling strip film is to have the work reversed on the negative by using a prism in the camera. The stripper must, of course, reverse the negative again when stripping in order to get the emulsion side of the film against whatever support is used, so that only plain water need be used when stripping. The following steps cover the stripping of strip film where the copy has been shot through a prism:

1. Cut through the emulsion of the strip film around the section to be removed.

2. Immerse the film in water and allow it to stand until the emulsion releases itself from the base.* This water should be at room temperature and film should not be in the water more than one hour.
3. Wet the area on which the insert is to be stripped with plain water, using a cotton swab.
4. Put the insert into position with the side that was against the base which will then be uppermost.
5. Using two or three thicknesses of blotter cut about 3 inches square, squeegee the excess water from under the insert, stroking from the center to the edges and watching that the position of the insert does not change.

If the strip film insert is shot without the use of a prism, it is necessary to strip it upon the support in the same position that it occupies on its base. This is equivalent to saying that you slide it from the base rather than flop it. Take the following steps:

1. Cut through the emulsion of the strip film around the section to be removed.†
2. Immerse the film in water and allow it to stand until the emulsion releases itself from the base.
3. Wet the area on which the insert is to be stripped using a cotton swab dipped in the following solution:‡

   ½ pint Gum Arabic (sat. sol.)
   ½ pint Glycerine
   1 pint water
   10 drops Acetic Acid 28%

4. Put the insert into position.
5. Squeegee the excess water out.

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* One company suggests it is better to peel the emulsion off dry and then wet same.

† It is the practice in some plants to strip the emulsion off at this stage.

‡ We include also another solution that is regularly used: *½ oz. Gelatin powder, ½ oz. Acetic Acid 28%, 16 oz. Hot water, Cold water to bring to quantity of 32 oz.*

Glass, acetate, or clear film may be used as a stripping support for strip film.* The film must be lacquered with a stripping lacquer thinned to a water consistency. This is done by running the film through a tray of stripping lacquer and allowing it to drain over the tray. When sure that the entire film is coated, hang it up to dry. If the film is not lacquered, the strip film cannot be stripped. When either the strip film or the wet plate is to be used for inserts on a film negative, the area to be occupied must be black spotted on the copy so that it will be transparent on the negative. To do this, "black spot" these areas on the copy with black paper or India ink.

Stripfilm inserts may be removed by soaking them with the stripping solution until they come free. This procedure, however, is not always successful. Wet plate is easier for the stripper to handle and it sticks to the support more readily. To produce a wet plate negative, the photographer coats a glass with collodion and immerses it in a bath of silver salts. He then makes his exposure while the plate is still wet. After developing and drying, he coats the plate with rubber cement and collodion. Due to this operation, the actual emulsion is between two layers of collodion and the whole can be removed from the glass and stripped down on film, acetate, or another glass by proceeding as follows:

1. Cut around the section of the wet plate to be used.
2. Place wet newsprint over this area and keep it moistened until it can be lifted from one corner and the whole area peels readily from the glass. The stripped film sticks to the news stock and may, therefore, be easily transferred to the new support.

   Caution: The emulsion must lift freely. It must not be forced [illegible] a tear might result.

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* Some plants regularly use glass as a base for strip film when line and halftone work are involved, while in bookwork they rule the layout on glass using lacquer which contains a violet-colored die. Then they strip up the front and opaque out the marks. Next they scratch in the marks with a needle, lacquer them over and make a blueprint of the layout on another glass. The final step consists of stripping the negatives to this blueprint, opaquing out the marks, scratching them in again with a needle, and applying lacquer.

It is common practice, when lifting the emulsion to squeegee a few drops of water under it to help free it from the glass.

3. Wet the area* on the support where the insert is to be stripped and place it in the proper position. Negatives do not need to be lacquered. Indeed wet plate negatives can be stripped either side down with plain water.
4. Squeegee away the excess water, working from the center outwards, and checking carefully to see that the position of the insert does not change.

When stripped to glass, the edges of the negative should be brushed with collodion to keep them from lifting. Small strips on any support also should be treated in this way.

Often it is necessary to have the same work repeated many times on a press plate. For purposes of economy, always try to utilize the entire printing area. From a practical standpoint, enough jobs of like quantities, color, and stock cannot always be assembled to fill the press sheet. Therefore, put a job up as many times as it will fit, or proportion it with other jobs according to the number of impressions to be run. To get the job on to the press plate more than once, either multiple negatives or step-and-repeat treatment will be necessary. If the job is a simple line shot, the photographer can make the number of shots needed. When it involves a number of inserts, it is better to strip up the unit and make a contact positive; then from this positive make the required number of negatives.

To reduce the number of negatives required, the job can be stepped up. This is the same as saying that half the flat can be stripped up then exposed twice on the plate. For this the platemaker needs as a guide a set of step-up marks consisting of two crosses cut at the outside corners of the unit and two crosses cut where the first two crosses are to be placed when making the second exposure. The platemaker handles such a flat similarly to a surprint. But for his second exposure in such instances, the part of the flat containing the work needs to be moved to the unexposed portion of the plate, registered with the marks provided, and exposed again. Naturally he must mask out the portion of the plate already exposed. Diagrams in Fig. 19 show several layouts for setup flats. Although a job can be stepped up any number of times on one plate, generally four exposures are the most it is practical to handle. When a surprint is used in conjunction with a stepup, the same set of marks should be used on the stepup and the surprint. This saves the platemaker the trouble of remembering which is which and allows for little chance of error.

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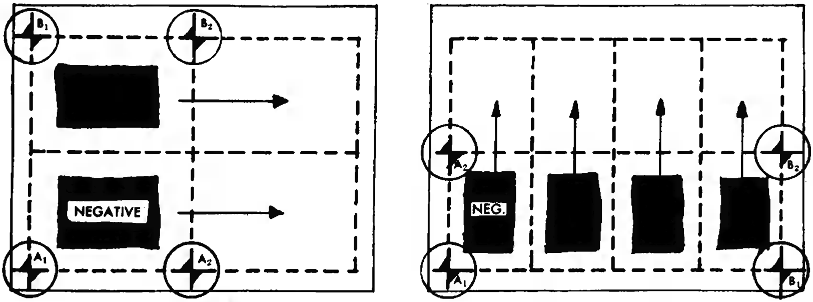
* Some recommend the use of lacquer at this stage.



STEP OVER

STEP UP

MARKS A_1 & B_1 MOVE TO POSITION A_2 & B_2 FOR SECOND EXPOSURE

FIG. 19

The job described above can be done with mechanical perfection in a photocomposing (step-and-repeat) machine. Here again, either a single negative or several negatives can be used. Center marks are drawn on the negative or unit and registered with center marks in a chase that holds the negatives in position in the machine. A set of readings is computed to correspond with the stepping of the negative into its proper position on the press plate. The platemaker sets the chase at the first setting and exposes; then he moves the chase mechanically to the second setting and exposes, etc., until the entire plate is covered. Almost any number of exposures can be made by this method, although when a large number of exposures is made, trouble may be encountered in developing the plate. The best practice, when stepping up a job, is to combine all the work so that a surprint is unnecessary. A job can be surprinted on the machine by registering the surprint on the chase and exposing it to the same set of readings while the plate is still in position.

Halftone inserts present a problem that line inserts do not. The background on line negatives is opaque; it only needs spotting to be ready for the plate. (Spotting means the removal of transparent spots that would be exposed on the plate and appear as dirt.) Generally such spots come from spots on the copy, or on the copy board of the camera, from poor developing of the film, etc. By cleanliness and good workmanship the camera department can produce negatives from good, clean copy that will need very little spotting.

Halftones, on the other hand, by the very nature of their production have a background that will print. To eliminate such possibility it is necessary to mask this background out, using masking paper, tape, or opaque. When the halftone is to have a square finish, i. e. occupy a square space on the job several things can be done: the masking paper can be cut out in this square area and the halftone inserted; strips of red tape can be run along the square edges; or opaque lines can be ruled with the ruling pen and the negative filled in up to them with opaque. When making a surprint, cutting squares in the mask is a very practical way of handling it. Using a straight edge and triangle, squares can be ruled with the surprint in position on the master flat. The surprint can then be removed, these areas cut out, and the halftones inserted. When a silhouette (outlined) halftone is wanted, take a brush and outline the subject with opaque, filling in up to the point where the mask begins. It is much easier to silhouette film halftones before stripping them in, as the negative can be turned around to any convenient position. Generally silhouette on the emulsion side as this enables the stripper to see better, to get directly against the subject and thus make the opaque take better.

Caution: Do not use opaque that is too thick or put too many layers on, as bad contact may result.

OBSERVATIONS

A job that has a great many line inserts, or one in which the inserts are to fit close to the text, can be handled more easily by having photostats or photographic prints of the inserts made to size. These should then be pasted into position to form a complete job. Thus the camera gets the job in one shot, eliminating the close stripping necessary if the copy has not been combined.

In cutting away the mask from the work areas, the stripper must exercise care and not cut across the work, especially the halftones because razor cuts refract light and accumulate dirt which acts as a mask and leaves a line on the plate. Any strips of the mask that are too thin, or that cannot be held firmly in place, should be removed and opaque or red tape substituted. In such cases, merely run the strip of red tape across the strip to be masked disregarding the work; then remove the unwanted tape by cutting it with the razor blade and peeling it off. A gap that is too narrow to be closed with red tape can be covered with transparent tape and the open slit opaqued over the transparent tape. Transparent tape must never be put over a halftone as it affects the area covered and spoils the plate.

Halftones that are too close together to be held firmly in place by tape can be rubber cemented to a piece of acetate, any necessary opaquing being done on the acetate. If the acetate is powdered with French chalk (talcum), the opaque will not roll off. Use transparent tape sparingly and whenever possible have the edges of the tape fall between two pieces of work, rather than through the work. Dirt collecting along the edges of the tape acts as a mask and blocks out a line on the work. Therefore, always try to make the flats sufficiently strong without the use of transparent tape.

Many jobs call for halftones to butt one against another with no space between. This is done most easily with stripfilm, or with wet plate, where a portion of each halftone is allowed to overlap the other. The two halftones are then cut through with a single stroke and the excess strips removed. In this way the two edges can be stripped together, so that no space occurs between them. Because of the thickness and hardness of film, getting the halftones to butt together with no intervening space showing, is quite difficult. It is done as follows:

1. Take photographic prints made to the proper scale, paste them on a single backing to provide the desired copy, then shoot this copy as one halftone.
2. Strip one halftone on the key flat and the other on the surprint, allowing an overlap along the adjoining edges of about two dots' width.
3. Fasten both halftones in position on the flat allowing them to overlap the dividing line. Place a straight edge along the dividing line and, holding the overlapping portions firmly in position, cut through both with a sharp razor blade held at an angle to the straight edge. By cutting at an angle, the edges will have a chamfer which will make a better joint than if they were cut square to each other. Discard the excess film and fasten firmly at each end of the joint.

   If the adjoining edges are very long, or if a number of halftones are involved, use a piece of acetate, or clear film, on the mask side as a support. The emulsion can be removed from the unexposed film by putting it into the hypo solution. When washed and dried, the resultant clear film can be used as a stripping base or support.

Flats should be clearly identified by marking on the gripper edge. The surprint for the flat should be marked likewise. For the pressman's identification, the platemaker should transfer this identification to the gripper edge of the plate.*

When units are stripped for making contact prints, especially when multiple negatives or positives are to be produced, corner marks should be cut so that they can be used in stripping the final flat.

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* One company suggests a method of marking as follows: Strip a small negative of the identifying number in the blank gripper space of the flat. The negative in such case being easily cut from a previously prepared film containing a whole series of numbers.

Surprint marks should be carefully matched by both stripper and platemaker, using a magnifying glass to obtain exact register.

The plate exposure is produced by the actinic light which is largely in the blue, violet, and ultraviolet regions of the spectrum. Orange, red, or black masking may be used as these colors will prevent the passage of the actinic light.

Definitions

STEPUP—the procedure of repeating the exposure of a flat by stepping it back from the gripper edge.

STEPOVER—the procedure of repeating the exposure of a flat by stepping it along the gripper edge.

OVERPRINTING—double printing or surprinting work on an area that has already been printed on.

HIGHLIGHT—the bright part of a picture represented by considerable opacity in the negative and by nearly clear paper in the print.

SHADOW—the shaded or darker portions of the picture.

MIDDLE-TONE—the intermediate tones between the shadow and the high-light tones.

ACTINIC—pertaining to the ability of light to produce chemical changes.

SILHOUETTE HALFTONE—a halftone that is to appear in outline having the background removed by masking.

SQUARE HALFTONE—a halftone that is to have a square finish.

HIGHLIGHT HALFTONE—a halftone in which the highlight dots are to be eliminated, thus being represented in the print by blank paper only.

Unit 6.

TINTS

Many pleasing effects are obtained in art work and pictures through the use of various tones (strengths) of the solid color. As we have seen in our study of halftones, these are represented by dots of different sizes printed with the solid color by the press. It is difficult for the artist to prepare flat tints as copy. It is also unnecessary, since there are several methods of producing these tints on the press plate. The customer need only indicate the area in which the tint is to go and specify the strength of the tint desired.

This specification of strength is based on the percentage of color to be applied to the area. For example, a specified 25% tint calls for 25% of the area to be printed. This proportion may be arrived at by printing a dot of color one-quarter of the size of the blank-paper area that is left surrounding it. It follows that when the total area to be tinted is covered with such dots, the eye sees a tint that is 25% as strong as a solid print of the color used. The negative of such a tint would show transparent dots one-quarter the size of the opaque areas. Another method of explaining the negative tint is to say that it takes three of the transparent dots to equal one of the opaque areas among them.

A 50% tint requires a negative in which the transparent dots and the opaque dots are of equal size. This particular strength is easily discernible as it corresponds to a checker board, the square areas just meeting at the corners.

A 75% tint is the reverse of the 25%. In it, three opaque dots equal the size of one transparent area among them.

The strength of any tint is qualified by the strength of the print, not by the amount of opaque area of the negative, as compared to the transparent area. Study Fig. 20 and compare the magnified printed areas with the magnified reproduction of the negative from which these prints were made. Note the relationship of the dots. It is well for the stripper to check the press sheets that are printed from tints he has selected, so that he can become experienced in judging tint values.

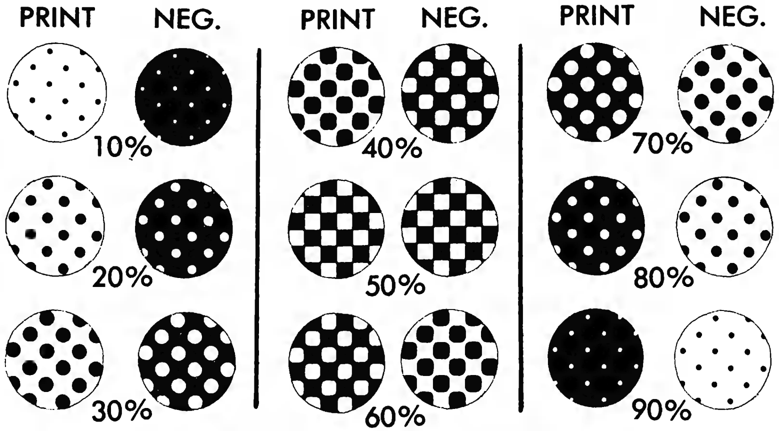

FIG. 20—TINT PERCENTAGES

The platemaker and pressman should also check against the specifications of the copy to see that they are printing the tint value desired. Stripper, platemaker, and pressman must cooperate to produce a prescribed tint, as any one of them cannot meet the specifications without the help of the other two.

Five methods of producing tints will be discussed:

First: by transferring an ink tint from a transparent printing film, one side of which carries the pattern of printing texture in relief. This is known generally in the trade as laying a Ben Day tint and derives its name from the machine used. The areas surrounding the portion of the work in which the tint is wanted are gummed out on the plate. The printing film is held in a hinged frame that allows it to be swung back from the plate, so that the relief side of the film can be inked with a roller, then lowered on to the plate in the same position each time. The greasy ink is transferred to the ungummed section of the plate by rolling or rubbing the printing film while it is in contact with the plate. Many varieties of dots, lines, and patterns are available.

Second: by printed shading sheets, known by the trade names of Bourges, Craft-tint, etc. These are transparent sheets carrying a printed tint and are pasted into position on the copy where the tint is wanted. The entire copy is then photographed as a line shot.

Third: by the Velox print. In this case an enlarged copy is photographed through a coarse screen, a print is made, line copy is added, and the whole reduced as a line shot. This reduction makes the screened areas finer.

Fourth: by a halftone tint, shot from an artist's copy. This is usually prepared by airbrushing the area with a grey paint.

Fifth: by photographic tints, prepared by the camera department as over-all tint negatives. These are produced by exposing the film to a white sheet through lens' openings of different sizes.

A supply of tints of various strength should be kept at hand for use whenever necessary. As this is the type of tint with which the stripper is most concerned, our discussion will center around it.

Photographic and halftone tints are handled as inserts and are stripped in, or surprinted, as desired. A great many backgrounds are produced by using tints. Where a close fit is required, such as a tint background surrounding a silhouette halftone, it is easier to opaque a mask on a piece of acetate or clear film, then lay the tint negative over this mask. An overlap of about two dots in width will give sufficient allowance for register without producing an outline that is too heavy.

A tint negative must be handled with the same precautions as a halftone. To further reduce the outline produced when allowing the overlap for register, turn the tint negative at various angles to the halftone until a position is reached in which the least pattern (moire) shows. It is possible for this angle to be reached by measurement. To do this proceed as follows:

a. Lay the straight edge along a continuous line of dots in the tint, using a magnifying glass. Make score marks at the edge of the negative to show the location of this line.

b. Similarly, make score marks on the edge of the halftone negative.

c. Using the 30° angle of the triangle, fasten the tint negative to the surprint so that there is a 30° difference in the directions of the line of dots. Where one negative overprints the other this angle will give the least pattern.

Stripfilm and wetplate tints can be stripped over clear areas produced by black-spotting the copy.

A number of problems arise from the use of photographic tints. Experience in handling these problems is essential, but even the beginner can check his flats for certain possible flaws.

One of the biggest problems is getting good contact. Always check to see that the mask is not too bulky, that the opaque is not too thick, that no overlap of film edges is present, that the emulsion is on the side which should contact the plate, that stickers are not too close to the work areas and that transparent tape has not been used over the work.

Great care must be taken in fitting the tint to the proper areas. Make all surprint marks clean and sharp. If the flat has been standing overnight or longer, check the fit just before it goes to the platemaker. As mentioned before, judge the tint by the strength it prints on the press.

Check the tint negative for scratches, spottiness, and unevenness of strength. When several areas of the same strength are wanted, and especially when these areas are to be close together in the print, try to cut them from the same sheet of film. An area that is too large to be covered by one piece of film should have splices made along a fold, or along its shortest line whenever possible. When line copy is being overprinted, if, as is sometimes true, the splice can be made to follow the line copy, the line showing where two sections of the tint join is eliminated.

Sometimes the contact in the plate-printing frame can be improved by laying a clear sheet of acetate over the entire flat between the flat and the glass, thereby spreading the pressure more evenly.

LITHO IN U. S. A.

(*Continued from Inside Front Cover*)

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Register Studies in Offset Lithography
Reactions of Lithographic Papers to Variations in Humidity and Temperature
Relation of Paper Properties to Register in Offset Lithography
Treatment of Offset Papers for Optimum Register
New Test for Dimensional Changes in Offset Papers
An Experimental Study of Beater Practice in the Manufacture of Offset Papers
Further Experimental Study of Beater Practice in the Manufacture of Offset Papers

Technical Bulletins

Modern Paper-Conditioning Methods and the Paper Hygroscope
The Inkometer, an Instrument for Measuring the Consistency of Lithographic Inks
Method of Conditioning Paper for Multi-color Offset Printing

Sales Bulletins

The Paper Hygroscope
The Register Rule

Miscellaneous Publications

Analysis of the Single Color Offset Pressman's Trade
Paper and Paper Problems
Selling Lithography: Unit 1. Creative or Planned Selling
Science of Photolithographic Processes and Materials
Handbook of Air Conditioning for Lithographers

SHOP MANUALS

Paper and Humidity in the Pressroom
Dot Etching
Albumin Platemaking
pH Control of Fountain Solutions
Line Photography for Lithographic Offset
Halftone Photography for Lithographic Offset
Color Separation
Color Correction
Graining
Proving
Deep-Etch Plates
Hand Transfers
Photo-Composing
Offset Press Work (B & W)
Offset Press Work (Color)
Inking System for the Lithographic Offset Press
Lithographic Press Offset Blankets
Offset Plates
Feeder & Delivery for Lithographic Offset Presses
Lithographic Press Cylinders
The Dampening System for the Lithographic Offset Press
Packing & Pressures
Guides, Grippers & Insertion Devices
Inks and Drying
Lithographic Offset Press Troubles
Special Instruments and Devices for the Lithographic Process